

INFORMATION DISCLOSURE CITATION

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| Attorney Docket No.: GC 560-D1-C1 | Serial No.: Unassigned |
| Applicant: Schellenberger et al. | |
| Filing Date: Filed Herewith | Group: Unassigned <i>1433</i> <i>M. Marich</i> |
| Page <u>1</u> of <u>3</u> | Date of this Submission: November 20, 2003 |

US PATENT DOCUMENTS

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|------------|------------|----------|-------------------|-------|-------|--------|
| Initial | Number | Date | Name | Class | Class | Date |
| <i>MM</i> | *5,718,785 | 02/10/98 | Van Gelder et al. | 435 | 8 | |
| <i>MM</i> | *5,807,522 | 09/15/98 | Brown et al. | 422 | 50 | |

FOREIGN PATENT DOCUMENTS

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| Initials | Number | Date | Country | Class | Class | Yes/No |
| <i>MM</i> | *WO/95/35505 | 12/28/95 | PCT | | | |
| <i>MM</i> | *WO 98/21340 | 5/22/98 | PCT | | | |

OTHER DOCUMENTS

| Examiner's | |
|------------|---|
| Initials | Author, Title, Date, Pertinent Pages, etc. |
| <i>MM</i> | *Alexandre et al., "Relationship between ethanol tolerance, lipid composition and plasma membrane fluidity in <i>Saccharomyces cerevisiae</i> and <i>Kloeckera apiculata</i> ," <i>FEMS Microbiol. Lett.</i> , Vol. 124 (1), pp. 17-22 (1994) |
| | *Aono et al., "Preparation of Organic Solvent-tolerant Mutants from <i>Escherichia coli</i> K-12," <i>Agric. Biol. Chem.</i> , Vol. 55(7), pp.1935-1938 (1991) |
| | *Bennett et al., "Rapid evolution in response to high-temperature selection," <i>Nature</i> , Vol. 346, pp. 79-81 (1990) |
| | *Coia et al., "Use of Mutator Cells as a Means for Increasing Production Levels of a Recombinant Antibody Directed Against Hepatitis B," <i>Gene</i> , Vol. 201, pp. 203-209 (1997) |
| | *Cox et al., "Structure and coding properties of a dominant <i>Escherichia coli</i> mutator gene, mutD," <i>Proc Natl. Acad Sci USA</i> , Vol. 80, pp. 2295-2299 (1983) |
| | *Cruden et al., "Physiological Properties of a <i>Pseudomonas</i> Strain Which Grows with <i>p</i> -Xylene in a Two-Phase (Organic-Aqueous) Medium," <i>Appl. Environ. Microbiol.</i> , Vol. 58(9): pp. 2723-2729 (1992) |
| | *de Bont, "Solvent-tolerant bacteria in biocatalysis," <i>Trends in Biotechnology</i> , Vol. 16: pp. 493-499 (1998) |
| | *de Visser et.al, "Diminishing Returns from Mutation Supply Rate in Asexual Populations," <i>Science</i> , Vol. 283, pp. 404-406 (1999) |
| | *Degenen et.al, "Conditional Mutator Gene in <i>Escherichia coli</i> : Isolation, Mapping, and Effector Studies," <i>J. Bacteriol.</i> , Vol. 117, No. 2, pp.477-487, (1974) |
| | *DiFrancesco et al., "The Interaction of DNA Polymerase III and the Product of the <i>Escherichia coli</i> Mutator Gene, mutD*," <i>The Journal of Biological Chemistry</i> , Vol. 259 (9), pp. 5567-5573 (1984) |
| | *Dillon et al., "Spontaneous Mutation at the <i>mtr</i> Locus in <i>Neurospora</i> : The Molecular Spectrum in Wild-Type and a Mutator Strain," <i>Genetics</i> , Vol. 138(1), pp. 61-74 (1994) |
| | *Eigen et.al, "The Origin of Genetic Information: Viruses as Models," <i>Gene</i> , Vol. 135, pp. 37-47 (1993) |
| | *Ginetti, " <i>Bacillus subtilis</i> mutS mutL operon: identification, nucleotide sequence and mutagenesis," <i>Microbiology</i> , Vol. 142 (Pt 8), pp. 2021-2029 (August 1996) |
| | *Greener et al., "Strategies In Molecular Biology," Vol. 7, pp.32-34, (1994) |
| <i>MM</i> | *Greener, et al., "An Efficient Random Mutagenesis Technique Using an <i>E. coli</i> Mutator Strain," <i>Molecular Biotechnology</i> (1997) Vol. 7, pp. 189-195 (XP-000974365) |

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| Examiner <i>M. Marich</i> | Date Considered <i>1/23/06</i> |
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| Applicant: Schellenberger et al. | |
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| Page 2 of 3 | Date of this Submission: November 20, 2003 |

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| Initial | Number | Date | Name | Class | Class | Date |
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OTHER DOCUMENTS

| Examiner's | |
|------------|---|
| Initials | Author, Title, Date, Pertinent Pages, etc. |
| MM | *Hall et al., "Evolutionary Potential of the <i>ebgA</i> Gene," <i>Mol. Biol. Evol.</i> , Vol. 12, No. 3, pp. 514-517 (1995) |
| | *Harder et al., "A Review Microbial Selection in Continuous Culture," Vol. 43, pp. 1-24 (1977) |
| | *Heery et al., "Curing of a plasmid from <i>E.coli</i> using high-voltage electroporation," <i>Nucl. Acids. Res., E. coli</i> , Vol. 17, pp. 10131 (1989) |
| | *Horiuchi et al., "A New Conditional Lethal Mutator (<i>dnaQ49</i>) in <i>Escherichia coli</i> K12," <i>Mol. Gen. Genetics</i> , Vol. 163, pp. 277-283 (1978) |
| | *Inoue, "A <i>Pseudomonas</i> thrives in high concentrations of toluene," <i>Nature</i> , Vol. 338, pp. 264-266 (1989) |
| | *Irving et al., "Affinity Maturation of Recombinant Antibodies Using <i>E. coli</i> Mutator Cells," <i>Immunotechnology</i> , Vol. 2, pp. 127-143 (1996) |
| | *Isken et al., "Bacteria tolerant to organic solvents," <i>Extremophiles</i> , Vol. 2 (3), pp. 229-238 (1998) |
| | *Kieboom et al., "Active Efflux of Organic Solvents by <i>Pseudomonas putida</i> S12 Is Induced by Solvents," <i>J. of Bacteriology</i> , Vol. 180(24), pp. 6769-6772 (1998) |
| | *MacDonald et al., "Microsatellite Instability and Loss of Heterozygosity at DNA Mismatch Repair Gene Loci occurs During Hepatic Carcinogenesis," <i>Heptology</i> , Vol. 28(1), pp. 90-97 (1998) |
| | *Maki et al., "Structure and expression of the <i>dnaQ</i> mutator and the RNase H genes of <i>Escherichia coli</i> : Overlap of the promoter regions," <i>Proc. Natl. Acad. Sci., U.S.A.</i> Vol. 80, pp. 7137-7141 (1983) |
| | *Mao et al., "Proliferation of Mutators in A Cell Population," <i>Journal of Bacteriology</i> , V. 179 (2), pp. 417-422 (1997) |
| | *Maruyama et al., "A Dominant (<i>mutD5</i>) and a Recessive (<i>dnaQ49</i>) Mutator of <i>Escherichia coli</i> ," <i>Journal of Molecular Biology</i> , Vol. 167, pp. 757-771 (1983) |
| | *Miller, J.H., "A Short Course In Bacterial Genetics," <i>Cold Spring Harbor Lab Press</i> , pp. 110-113 (1992) |
| | *Miller, "Experiments in Molecular Genetics," <i>Episomes, E.Coli, Acridine Orange Molecular Genetics</i> , p. 140 (1972) |
| | *Naki, et al., "Selection of a subtilisin-hyperproducing <i>Bacillus</i> in a highly structured environment," <i>Appl. Microbiol. Biotechnol.</i> (1998) 49: pp. 290-294 (XP-000972404) |
| | *Pham et al., "The Base Substitution and Frameshift Fidelity of <i>Escherichia coli</i> DNA Polymerase III Holoenzyme in Vitro," <i>J. of Biol. Chem.</i> , Vol. 273(36), pp. 23575-23584 (1998) |
| | *Pinkart et al., "Phospholipid Biosynthesis and Solvent Tolerance in <i>Pseudomonas putida</i> Strains," <i>J. Bacteriol.</i> , Vol. 179(13), pp. 4219-4226 (1997) |
| | *Priebe et al., "Nucleotide Sequence of the <i>hexA</i> Gene for DNA Mismatch Repair in <i>Streptococcus pneumoniae</i> and Homology of <i>hexA</i> to <i>mutS</i> of <i>Escherichia coli</i> and <i>Salmonella typhimurium</i> ," <i>J. Bacteriol.</i> , Vol. 170(1), pp. 190-196 (1988) |
| | *Prudhomme et al., "Mismatch Repair Genes of <i>Streptococcus pneumoniae</i> : HexA Confers a Mutator Phenotype in <i>Escherichia coli</i> by Negative Complementation," <i>J. Bacteriol.</i> , Vol. 173(22), (1991) |
| MM | *Prudhomme et al., "Nucleotide Sequence of the <i>Streptococcus pneumoniae</i> <i>hexB</i> Mismatch Repair Gene: Homology of HexB to <i>MutL</i> of <i>Salmonella typhimurium</i> and to PMS1 of <i>Saccharomyces cerevisiae</i> ," <i>J. Bacteriology</i> , Vol. 171 (10), pp. 5332-8 (1989) |

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| Page <u>3</u> of <u>3</u> | Date of this Submission: November 20, 2003 |

US PATENT DOCUMENTS

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OTHER DOCUMENTS

| Examiner's | |
|------------|---|
| Initials | Author, Title, Date, Pertinent Pages, etc. |
| mm | *Ramos, et al., "Mechanisms for Solvent Tolerance in Bacteria," <i>J. Biol. Chem.</i> , Vol. 272(7), pp. 3887-3890 (1997) |
| | *Roa, et al., "Changing the substrate specificity of penicillin G acylase from <i>Kluyvera citrophila</i> through selective pressure," <i>Biochem. J.</i> (1994) 303, pp. 869-876 (XP-000972422) |
| | *Schaaper, "An <i>Escherichia coli</i> dnaE Mutation with Suppressor Activity toward Mutator mutD5," <i>Journal of Bacteriology</i> , Vol. 174(6), pp. 1974-1982 (1992) |
| | *Schaaper, "Mechanisms of mutagenesis in the <i>Escherichia coli</i> mutator mutD5: Role of DNA mismatch repair," <i>PNAS</i> , Vol. 85, pp. 8126-8130 (1988) |
| | *Schellenberger, "Directed evolution of subtilisin for improved surface proteolysis," (1998) BTEC 73, Vol. 216, No. 1-3 (XP000972454) |
| | *Sniegowski et.al, "Evolution of high mutation rates in experimental populations of <i>E. coli</i> ," <i>Nature</i> , Vol. 387, pp. 703-705 (1997) |
| | *Snyder et.al, "Molecular genetics of bacteria," <i>American Society for Microbiology</i> , chap. 3: pp. 85-89 (1997) |
| | *Taddei et.al, "Role of mutator alleles in adaptive evolution," <i>Nature</i> , Vol. 387, pp. 700-702 (1997) |
| | *Taft-Benz et al., "Mutational analysis of the 3'→5'proofreading exonuclease of <i>Escherichia coli</i> DNA polymerase III," <i>Nucl. Acids Res.</i> , Vol. 26(17), pp. 4005-4011 (1998) |
| | *Takano et al., "Structure and function of dnaQ and mutD mutators of <i>Escherichia coli</i> ," <i>Mol. Gen. Genet.</i> , Vol. 205(1), pp. 9-13 (1986) |
| | *Trobner et.al, "Selection against hypermutability in <i>Escherichia coli</i> during long term evolution," <i>Mol. Gen Genet</i> , Vol. 198, pp. 177-178 (1984) |
| | *Weber et al., "Adaptation of <i>pseudomonas putida</i> S12 to High Concentrations of Styrene and Other Organic Solvents," <i>Appl. Environ. Microbiol.</i> , Vol. 59(10), pp. 3502-3504 (1993) |
| | *Yamagishi, et al., "Mutational analysis of structure - activity relationships in human tumor necrosis factor-alpha," <i>Protein Engineering</i> , Vol. 3, No. 8, pp. 713-719 (1990) (XP-000971051) |
| mm | *Yomano, "Isolation and characterization of ethanol-tolerant mutants of <i>Escherichia coli</i> KO11 for fuel ethanol production," <i>J. Ind. Microbiol. Biotechnol.</i> , Vol. 20(2): pp. 132-138 (1998) |
| mm | *Copy of International Search Report for PCT/US00/43937 |
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